INDEX TO SURGICAL PROGRESS.

GENERAL SURGERY.

The Treatment of Hydrophobia. By Dr. C. W. DULLES (Philadelphia). The author is of the opinion that the only medication of hydrophobia, which offers any chance of being successful, consists in the use of cannabis indica, hyoscine hydrobromate, one of the synthetical hypnotics, or mixed narcosis. The synthetical hypnotics deserve trial, especially since they do not of themselves tend to produce delirium or mania. With a little ingenuity drugs may usually be administered by the mouth to patients with hydrophobia. When this is impossible, remedies can be administered hypodermically. A hydrophobic patient is not dangerous to his attendants or friends, except as any maniacal patient may do bodily harm. The literature of hydrophobia does not furnish a single trustworthy instance of the communication of hydrophobia from a hydrophobic patient to a human being. A hydrophobic patient should not be tormented with drink or food; the disease does not kill by famishing or starvation. It ought to be the rule in a case of hydrophobia to reduce physical restraint and medical treatment to the very lowest point, and to make no attempts at feeding. Every effort should be made to divert his attention from himself.

The author maintains that Pasteur's inoculations have increased the number of deaths from hydrophobia. He asserts that they have not diminished the number of deaths from the primary disease, but that they have added to them a large number of deaths due to the inoculations themselves. He claims that the reports of Pasteur and his adherents have been manipulated, and points out what he calls the stupendous fallacy of the claim that 1400 Frenchmen were cured by the Pasteur treatment in the year 1893, more persons than have died from hydrophobia in the United States in a century.—*Reprints from the Therapeutic Gazette and the Medical News.*

ABDOMEN.

I. Intestinal Obstruction following Intraperitoneal Operations. By Dr. George H. Rohé (Catonsville, Md.). Obstruction of the bowels causes between 1 and 2 per cent. of the deaths following ovariotomy and other operations involving opening of the peritoneal cavity. Sir Spencer Wells lost eleven out of his first series of 1000 cases of ovariotomy from this cause (1.1 per cent.). Fritsch places his mortality from ileus post laparotomiam at 1.6 per cent. Klotz has reported thirty-one cases of intestinal obstruction with five deaths due to this complication in a series of 421 abdominal sections and 148 vaginal extirpations of the uterus. The author has collected in the literature and from personal communications no fewer than seventy-five deaths from this cause. While this number seems large, it probably represents less than half of the deaths properly attributable to this accident, for there can be no doubt that not a few fatal cases of peritonitis and intractable vomiting after laparotomy are really cases of obstruction of the bowels.

Secondary or post-operative intestinal obstruction may be roughly divided into two classes of cases, one due to mechanical causes—adhesions, peritoneal bands, volvulus, accidental fixation by sutures, etc., and perhaps compression in exudation masses—and another due to paralysis of peristaltic movement of the intestines following sepsis or injury to the nerve-supply of the muscular coat. The obstruction may be acute—*i.e.*, occur immediately after or within a few weeks subsequent to the operation—or it may develop gradually and not become complete until months or years afterwards.

The majority of cases in which the cause of the obstruction was ascertained by operation *intra vitam* or by necropsy have been found to be due to abnormal fixation of the intestines by adhesions or to compression by peritoneal cords or bands inflammatory in origin. Obstruction after ovariotomy is often due to adhesions between the bowel and the pedicle. In addition, the small intestine may become doubled upon itself and so firmly adherent that the gut is entirely impervious. Adhesions of a knuckle of bowel to the abdominal incision or to other portions of the abdominal wall have frequently been found to be the cause of the obstruction, the abnormal fixation causing acute flexure of the intestinal tube.

Another form of obstruction is produced by a coil of small intestine sinking into Douglas's cul-de-sac and becoming fixed there by adhesions. The descending colon has been found glued fast at an angle to the posterior surface of the uterus. A small portion of intestine has become adherent to the abdominal incision behind the edge of the omentum, and another loop has slipped through above this adhesion between the bowel behind and the abdominal wall in front, and has thus become obstructed.

A fold of the bowel has been caught under a suture, and a knuckle of intestine has been found in the incision between two sutures. A case has been reported where a coil of intestine slipped through one of the loops of wire used as sutures for the wound, and was tightly compressed when the wire was fastened. In one case an adherent ovarian cyst, emptied by the trocar, so dragged upon the bowel as to cause obstruction. Some cases of obstruction post laparotomiam are possibly due to leaving old bowel adhesions undisturbed at the time of operation. Cases have occurred in which death ultimately resulted from an obstruction undoubtedly present before operation.

An elongated adhesion between the uterus and interior abdominal wall, following ventrofixation, has caused fatal obstruction.

Some cases have been observed in which the obstruction was due to an internal hernia through an opening in the omentum.

Volvulus sometimes occurs after abdominal section, but probably only after some previous adhesion or constriction of the bowel.

There seems no question that by far the larger proportion of cases of post-operative intestinal obstruction are due to adhesions of the intestines to each other, to the abdominal walls, or to other viscera. Sepsis, destruction or separation of the peritoneum, the use of strong chemical antiseptics in the abdominal cavity, rough handling of the visceral or parietal peritoneum by sponges, hands, or instruments, prolonged exposure of the peritoneum to the air, and the use of certain suture materials have all in turn been accused of producing adhesions. Experiments and clinical observation have, however, shown that neither of these conditions is sufficient to account for all cases. It is well known that intestinal or omental adhesions to the margins of the incision are found in nearly every case in which the abdomen is opened subsequent to laparotomy, and that they occur in cases in which all the above-mentioned conditions can be excluded. On the other hand, adhesions sometimes do not occur where they might reasonably be expected.

The symptoms of intestinal obstruction post laparotomiam are essentially the same as those of primary obstruction. They are, however, often masked by pain, vomiting, and tympanites,—so frequently present after abdominal operations without being significative of obstruction. Unless the obstruction is due to some untoward occurrence in the technique, the significant symptoms are not likely to be present for several days subsequent to the operation. If a patient does well for three or four days or longer after an abdominal section or vaginal extirpation, and is then suddenly attacked by pain followed by vomiting, tympanites, and inability to pass fæces and flatus, the diagnosis of intestinal obstruction is probable. If the vomiting becomes fæcal, the pulse rapid, the urine scanty, and symptoms of collapse set in, the diagnosis becomes reasonably certain. Unfortunately, however, all these symptoms are not uniformly present in obstruction. When the obstruction is high up in the small intestine fæcal vomiting is usually absent, and distention is likewise less marked. In these cases, also, the bowels may move several times after the pain begins, so that the diagnosis may be more or less uncertain.

Recent observations have furnished additional data upon which to base an opinion. Von Wahl first called attention to the occurrence of local distention of the bowel above the point of occlusion in mechanical obstruction. This distention begins at the point of obstruction, and extends upward along the course of the bowel. In mechanical obstruction, therefore, if the case can be observed from the beginning, there will be found an elastic swelling localized at a point of the abdomen and gradually enlarging, the direction of increase in size being along the course of the constricted bowel above the constriction. The distention is attributed to rapid decomposition of the arrested intestinal contents. Coincident with this local meteorism is an increased peristaltic movement of the bowel, also above the obstruction. In the later stages, particularly if septic peritonitis with paresis of the intestinal walls has occurred, these distinguishing signs are no longer available. In cases of obstruction due to paralysis of the intestine from the beginning (probably always a consequence of septic peritonitis) these symptoms are not present. Here there is a uniform globular distention of the abdomen without movement of the intestines, and without noticeable contours of the bowels through the abdominal walls.

An additional diagnostic sign, according to Rosenbach, Rosin, and others, is furnished by the urinary reaction. It is claimed that in complete obstruction of the ileum there is always indican in the urine. In obstruction of the colon or high up in the small intestine this reaction is usually not present. The reaction is obtained by boiling a small quantity of the urine in a test-tube, and adding nitric acid *guttatim*. The urine turns to a Burgundy-red color, and a similarly colored precipitate is thrown down. This has been shown by Rosin to be a mixture of the urinary coloring matters known as indigo blue, indigo red, and indigo brown. If urine yielding this reaction is shaken, a violet-colored foam is produced. Rosenbach attributes great prognostic significance to this reaction. So long as it remains, the case is a grave one. If, after operation for relief of the obstruction, the reaction persists, the obstruction has not been removed. In cases where the obstruction is relieved the reaction disappears within twenty-four hours. While this sign must be regarded as a very important one, it is not absolutely pathognomonic, as a similar reaction occurs in some other morbid conditions.

The rational treatment of intestinal obstruction following abdominal section is to reopen the abdomen either in the line of the first incision or at some other point, seek for the place of obstruction, relieve the same by separating adhesions, dividing constricting or restraining bands, or untwisting a volvulus. If the gut be much distended an incision to let out the gas and fluid fæces may be made, and the bowel afterwards carefully sutured. Gangrenous intestine must be resected, and the ends joined by suture or Murphy's button. At times it may be advisable to do colotomy, but the readiness with which the ends of resected intestine can be joined with Murphy's excellent device will probably render the operation of colotomy for this condition much less frequent than formerly. If the obstruction is due to a volvulus it would probably be always advisable to resect the twisted portion of the gut, as the volvulus is extremely likely to recur.

When practicable, it is probably always better to make the incision in the middle line, as it permits more thorough and ready exploration. When the abdomen is opened search should first be made for the obstruction in the iliac regions, as here obstruction is most likely to occur. If not found in either of the iliac fossæ, and if it cannot be located by local distention, the entire length of the intestine must be passed through the fingers until the constriction is found. As it not infrequently happens that there is more than one point of constriction, the examination should be thorough.

The distention and congestion of the intestine above, and its pale, empty, and flaccid condition below the constriction will often enable one to find the obstruction readily. Eventration of the intestines should be avoided, if possible, although, if the obstruction cannot be otherwise discovered, this becomes necessary.—*American Journal of Obstetrics*, October, 1894.

II. Experiments upon the Gall-Ducts and the Liver. By Dr. NASSE (Berlin). Nasse has reported a series of experiments bearing upon extirpation of the gall-bladder. Like previous experimenters, he found no ill results from the operation upon guinea-pigs and rabbits. Oddi observed that, after removal of the gall-bladder in dogs, great hunger, diarrhœa, and emaciation developed, and that after a month a widening of all the gall-ducts, and after two or three months a compensatory dilatation of the stump of the cystic duct occurred. Nasse was unable to confirm these observations, as none of these symptoms occurred in the dogs upon which he operated.

He further practised ligation of single branches of the hepatic duct, in order to be able to observe not only the primary but also the later stages of hepatic changes due to biliary obstruction. After the ligation, an hypertrophy at once began in those parts of the liver where the flow of bile was not obstructed, as Ponfick has observed after resection of portions of the liver. In the ligated portion of the liver the peculiar changes appeared, such as small areas of necrosis, proliferation of gall-ducts, and development of connective tissue. Then followed a rapid atrophy of the liver cells and shrinking of that lobe of the organ. This atrophy is completed in four months. The shrunken lobe is then represented by fibrous connective tissue, and the bile-ducts which developed at the beginning of the obstruction.

In a series of experiments by which the obstructed duct was again rendered patent, Nasse observed that the atrophy and the development of bile-ducts and connective tissue could be checked in their progress. Even when they had gone on to an extreme degree the liver cells regenerated as soon as the obstruction was removed from the bile current.—*Verhandlungen der deutschen Gesellschaft für Chirurgie*, XXIII Kongress, 1894.

III. A Liver Abscess and a Lung Abscess with Protozoa. By DR. F. GRIMM (Berlin). A peasant woman, forty years of age, entered the hospital at Yezo with an abscess of the lung and liver, the pus of which contained an immense number of flagellæ with flattened bodies (30–60 μ) and a long appendix at the rounded pole. The bodies were surrounded by a bright border, and in the insides were delicate tortuous canals.

The patient had been seized with chills, followed by high fever, on the second or third day a cough and expectoration developed. The phlegm was slightly fetid, pale yellow, and frothy, in the liver abscess, from which three litres of pus were evacuated, the protozoa were very thick,—three to ten could be seen in a field of a 100-power enlargement.

While the patient had not yet recovered, a pulmonary abscess, the size of an hen's egg, broke, after this, rapid convalescence began. Three months later the patient coughed up some bloody pus, which still contained traces of the flagellæ.—*Verhandlungen der deutsche Gesellschaft für Chirurgie*, XXIII Kongress, 1894.

IV. On the Operative Treatment of Gastric Ulcer. By Dr. E. KÜSTER (Marburg). The author states that ulcers of the stomach have heretofore justified operation when perforation occurred, when stenosis of the pylorus resulted, and, lastly, when they gave rise to severe and frequent hæmorrhage. The last indication has induced operation in only one case,—a fatal case in the hands of Mikulicz. Küster has reported an especially instructive case which recovered. The patient, aged eighteen, had developed her symptoms after lifting a heavy weight. Vomiting and abdominal pain were followed by emaciation. Two years later a marked dilatation of the stomach and a floating kidney on the right side were made out. But a transitory improvement resulted from fixation of the kidney. One year after this, severe and repeated hæmorrhages from the stomach occurred, which reduced the patient to the extremest degree. Ten months after the onset of the hæmorrhages the patient was subjected to operation. After opening the greatly-dilated stomach, a large deep ulcer with overhanging edges was found situated upon the posterior wall near the pylorus. It was adherent to the pancreas. A cherry-stone was found lodged in its depth. Küster cauterized the ulcer with the thermo-cautery, and as the opening into the duodenum could not be found, a communication about five centimetres broad was made with the jejunum. Healing was complicated by an abscess in the abdominal wall, though the patient recovered and at the end of two years was able to work and take any sort of food. No hæmorrhages occurred after the operation.

From this observation Küster has made the following deductions: (1) The hæmorrhage from a gastric ulcer can be checked by an energetic cauterization. (2) In ulcers which are located near the pylorus gastro-enterostomy is preferable to pyloroplasty, because the latter does not protect against subsequent contractions and narrowings. (3) A very wide communication between stomach and intestine not only does not present any objections, but because of the circular contraction of the suture line a large opening is really an advantage.—*Verhandlungen der deutschen Gesellschaft für Chirurgie,* XXIII Kongress, 1894.

V. Case of Perforating Ulcer of Stomach; Recovery after Laparotomy and Suture. By Dr. MICHAUX (Paris). A robust man, thirty-one years of age, was admitted into the Hôpital Beaujon, September 23, 1894, with history of ulcer of stomach, and with symptoms of rapidly-extending peritonitis.

On opening the abdomen, Dr. Michaux discovered a small linear perforation high up on the anterior surface of the stomach, very near the cardia. At each respiratory movement a leakage of fluid from the stomach took place from this orifice.

The abdomen was washed out with boiled water, and large antiseptic sponges were placed for protection in the lower part of the abdomen. The surgeon endeavored to suture the borders of the perforation, but the silk threads tore through, on account of friability of the tissues. The high inaccessible situation of the ulcer rendered excision impossible. As a somewhat desperate experiment, Michaux made a fold of the front wall of the stomach by which the perforation was completely buried; the ulcer was fixed in the bottom of this fold by a double row of Lembert silk sutures; the first row extended beyond the ulcer which could be seen, and which had the dimensions of a five-franc piece. The wound was left open, an iodoform-gauze tent being inserted for drainage.

The patient was fed by the rectum for a long time; the gauze pledget was left in for eight days. A purulent fistula remained for six months; it then healed, and the patient was reported as perfectly well and able to work.—*Mercredi Medical*, October 24, 1894.

VI. Case of Perforative Ulcer of Stomach treated by Laparotomy, Stitching, and Washing Out. By R. H. BOURCHIER NICHOLSON, M.R.C.S. (Hull). A female, aged thirty-two, was admitted to the Hull Infirmary on October 27, 1894, at 6 P.M., suffering from acute pain in the epigastric region, and in a very collapsed condition.

A ruptured ulcer of the stomach was diagnosed. There was acute pain over the left hypochondriac region, loss of liver dulness, and some general distention of the abdomen. The first shock of the perforation having passed off, and the patient having rallied somewhat, three hours after the supposed rupture of the ulcer into the peritoneal cavity, the abdomen was opened by an incision, five inches long, above the umbilicus in the median line. On opening the peritoneal cavity there escaped a large quantity of flatus. The stomach being drawn into the wound the operator was guided by the escaping fluid contents to the anterior and upper surface very near the entrance of the œsophagus; in fact, so near that he could readily detect the perpendicular muscular fibres of the œsophagus entering the stomach walls. The opening was the size of a goose-quill. It had clean-cut edges, and was the centre of an area of thickened walls, about one and a half inches in diameter. Keeping his left forefinger over the opening to prevent further escape of the contents of the stomach,—which was apparently nearly empty,—after thorough cleansing, by pressing the ulcer and its surrounding hardness backward, and drawing some of the stomach up he was able to double the surface inward, so as to bring the two healthy peritoneal surfaces together by infolding. Then when these were fixed by eight Lembert's stitches, he again, with a continuous suture, brought the two surfaces together external to the first row of sutures.

The toilet of the peritoneum was performed by washing out with a douche, using boiled water at a temperature of 105° to 110° F.

For drainage purposes, an incision two inches long was made below the umbilicus, just over the pubes. More gas escaped; and, after again washing out from below most thoroughly, he inserted into Douglas's pouch a long glass drainage-tube, still washing with the boiled water until the fluid came away quite clear. The patient rallied directly the washing-out process—which acted as a stimulus—commenced. The patient was ordered to be fed by rectum with peptonized milk and brandy every four hours. An uninterrupted convalescence followed. The drains were removed on the fifth day.—*British Medical Journal*, November 3, 1894.

VII. Recovery after Intraperitoneal Perforation of Gastric Ulcer. By A. PEARCE GOULD, F.R.C.S. (London). In the course of a discussion of the subject of the operative treatment of perforative ulcer of the stomach and intestines, the author reported the following case from the service of Mr. Henry Morris, at the Middlesex Hospital: The patient was a young woman, aged twenty-four, who had suffered for six months from pain at the epigastrium after food. Two hours after a dinner of haddock, bread, and tea, and while running upstairs, a sudden pain caught her "round her heart," and before she could get to the hospital—a distance of a few hundred yards—the pain spread all over the chest and abdomen, and "drew her up double." When first seen, about an hour after the onset of the pain, there was no evidence of shock; her color was good; her pulse was 80, full and regular; and she answered questions readily. She complained of pain all over the abdomen, which was somewhat full, but moved freely with respiration. There was great tenderness above the umbilicus, none below; the percussion note was everywhere tympanitic, the liver dulness was lost, but no bell-sound could be elicited. She had not been sick. Three hours later, when Mr. Morris operated, her general aspect was worse, her face was pale, and expressed pain ; she was tender below as well as above the umbilicus, and careful measurements showed that the belly had considerably increased in circumference. The pulse was 96, respirations 44, and temperature 98.2° F. Mr. Morris opened the belly above the umbilicus, and at once found a perforation in the anterior wall of the stomach close to the pylorus ; the stomach was drawn out, the ulcer sutured, and the peritoneum was very thoroughly washed out with carbolic acid solution, 1 in 400, at a temperature of 105° F., and a good deal of lymph was sponged from the surface of the liver. During the washing out the patient stopped breathing once or twice, and the pupils dilated widely, while the pulse became weak, dicrotic, and intermittent. The patient made an excellent and complete recovery.

This case Mr. Gould states to be the fifth instance in which a perforated gastric ulcer has been deliberately cut down upon and sutured, and the peritoneum cleaned and recovery ensued.

These cases have been recorded by Kriege, Morse, Maclaren, and Gilford. In Maclaren's case : A girl, aged fourteen, was sent into the Cumberland Infirmary, February 4, 1894. The girl was small for her age. She had the usual story of pain following food for some time, and then a sudden, severe attack with marked collapse. The operation was done nine hours after perforation, which had occurred two hours after dinner. The intestines were not distended. She bore operation well, and the peritoneal flushing was very thorough. No food was given by the mouth for a week, then beef-tea alone for two days, next arrow-root, and so on. Nutritive enemata were well retained, and the patient suffered little inconvenience and no visible detriment from thus putting her stomach at rest. Her recovery was absolute.

In Kriege's case the serous membrane was wiped clean, not flushed. Mr. Taylor reports yet another case in which the peritoneal cavity was washed out and drained below the umbilicus ; subsequently a subphrenic abscess was opened, and the patient died from intestinal obstruction from kinking of the bowel.—*British Medical Journal,* Octobei 20, 1894.

VIII. Gunshot Wound of the Spleen and Kidney; Abdominal Section; Hæmostasis by Deep Suture; Recovery. By LOUIS McLANE TIFFANY, M.D. (Baltimore). The patient was a male negro, twenty years of age. Two hours previous to entering the University Hospital, March 21, 1894, he had been shot with a small calibre rifle from a distance of twenty feet, the weapon being directly behind him and he being erect. His urine was slightly albuminous; the pulse, temperature, and respiration normal. There was a bullet-wound three inches to the left of the spine just below the last rib, from which blood oozed. Three hours later, about five hours after the shooting, the only change that had taken place since entry into the hospital was an increase of five per minute in the number of respirations; the pulse and temperature were not changed, and there was no appearance of shock and no pain. External examination of the abdomen by touch and palpation revealed nothing, not even painfulness.

The patient was anæsthetized, laid on the belly, and the wound, after being enlarged, was examined. The upper portion of the left kidney was perforated, and dark blood flowed from the peritoneal cavity beyond. This large wound was filled with gauze, the patient turned on the back, and the abdomen freely opened along the left semilunar line. A moderate amount of blood was free in the peritoneal cavity. No wound of the intestine could be discovered, but the spleen was found perforated, blood flowing freely from the wound of entrance as well as from the wound of exit. The latter wound, in the concavity of the organ, was slightly the larger of the two.

The perforation through the spleen was about three inches from the free lower border. The bleeding was arrested in the following manner: A long needle threaded with silk was passed entirely through the spleen central to and parallel with the bullet-track; the long ligature was then tied over the free border of the organ so as to press the surfaces of the wound together tightly enough to arrest bleeding, yet not to tear through the splenic tissue; the ends of the ligature were cut short, the peritoneal cavity cleansed by copious irrigation with hot water, and the abdominal wound closed. The kidney was tamponed with gauze through the dorsal wound. Convalescence was uneventful; the anterior wound healed by primary union; urine flowed from the dorsal wound for two days only, union by granulation taking place. The patient left the hospital well April 2.—*Medical News*, November 17, 1894.

IX. A Successful Splenectomy for Chronic Inflammatory Hyperplasia. By Dr. JAMES MURPHY (Sunderland). A woman, forty-five years of age, for more than a year had noticed a painful swelling in the left hypochondriac region. There had been no affection of the alimentary system, and no alteration in the quality or quantity of the urine. She had been losing weight in spite of a good appetite for several months, and during the same period she had suffered much from shortness of breath, and had become very blue about the face and neck.

On admission there was a large tumor on the left side of the abdomen passing under the ribs above, and below reaching to the level of the iliac crest. Externally it reached far back to the spine, and internally it extended beyond the median line; it was very slightly movable; its surface irregular, as if four or five small masses grew from it. No serious disease could be detected in the chest; the heart-sounds were normal; the blood was found to be in a fairly healthy condition, and there was no evidence of leucocythæmia. Her breathing was short and rapid, and she was distinctly cyanosed, and she occasionally had slight rigors; she was in a very enfeebled condition, losing flesh and strength, and suffering much from pain in the spleen. There was no leucocythæmia, and her symptoms were evidently due to the enlargement of the spleen.

On April 25 an incision about eight inches long was made along the left linea semilunaris down to the peritoneum, the hæmorrhage was excessive,—dark venous blood,—and some seven or eight large dilated veins were tied with catgut. The peritoneum was then opened. There were no adhesions to the parietes, but the omentum was firmly adherent over the greater portion of the spleen, in some places being puckered up, which gave rise to the irregular feeling discovered through the abdominal wall. The transverse colon was also adherent in two or three places; the adhesions were rapidly but carefully broken down, the bleeding points being instantly seized with Péan's forceps, but quickly as this was done, two or three ounces of very dark venous blood were lost. The vessels, principally veins, were exceedingly friable, and readily tore. All bleeding points from the adhesions being secured, the spleen was gently removed—the lower end first—from the abdominal cavity. She suddenly became very much collapsed, and seemed as if she were about to die. The pedicle, which was thin and broad, measuring about five inches, was secured in the following manner: beginning at the upper edge, where the vessels were smallest, it was secured in three portions with double silk ligatures, and divided between them. The ligatures were not locked; in this manner the outlying (so to speak) portion of the pedicle was secured, but the large vessels in the centre of the pedicle were left untouched. In a similar manner the lower outlying portion of the pedicle was secured in four portions, the ligatures were not locked, and the pedicle was cut across between each pair of ligatures after they were secured. There then remained in the centre a portion of the pedicle about the size of a thumb, containing vessels somewhat bigger than a large goose-quill; a long silk ligature was carefully drawn through these, and the remaining portion of the pedicle was firmly secured with a Staffordshire knot. The spleen was then cut off; there was no more bleeding. Little blood escaped into the peritoneum, having been caught in sponges. She was in such a collapsed condition that no time was lost in irrigating the abdomen, which was rapidly closed by silkworm-gut sutures; no drainage.

The patient rallied slowly, and gradually improved, but her convalescence was complicated by a moderate broncho-pneumonia. At the end of six weeks she was discharged, quite free from pain, and in much better health and spirits than she had been for two years. Microscopical examination showed the spleen to be the seat of a simple inflammatory hyperplasia.—*British Medical Journal,* November 3, 1894.

X. Drainage after Operations on the Gall-Passages. By Rutherford Morison, F.R.C.S. (Newcastle-on-Tyne). A pouch exists below the right lobe of the liver and gall-bladder, separated from the general peritoneal cavity by natural barriers. This pouch can be efficiently drained through an opening in the parietes near the lower end of the kidney. A transverse is better than a vertical incision in operating for gall-stones; less likely to be followed by ventral hernia, and giving free access. Biliary fistula results from operations for gall-stones in a considerable percentage of cases in which the gall-bladder has been attached by sutures to the parietes. The method of attachment has little to do with this result, and it may follow when the ducts are patent. The gall-bladder and ducts may safely be allowed to empty into the pouch described if it is properly drained. The gall-bladder should never, except when suppurating, be stitched to the abdominal wall. If the pouch is properly drained, (*a*) when the gall-bladder is distended, the opening in it should be closed by sutures and the viscus returned into the abdominal cavity and the drain left until the certainty of its successful closing is complete. (*b*) When the gall-bladder is shrunken and there is difficulty in closing the opening made in it, it may be returned unclosed. (*c*) When a stone is impacted in the cystic duct and evades all ordinary efforts to remove it, the gall-bladder should be excised and the duct ligatured after removing the stone in it. (*d*) When a stone is impacted in the common duct, the duct is incised, and after the stone or stones are removed the opening may be left unclosed if there is any difficulty in applying a satisfactory suture.

Experience suggests that the chief problem in operations for gall-stone is the purely mechanical one of effectual drainage. If this be admitted, consideration of the anatomy of the parts points to a solution of the difficulty. The gall-bladder can be opened on its under surface and allowed to drain into this pouch, and an opening may be made into the common bile-duct on its outer or under surface for the extraction of a stone, and left to take care of itself in confident anticipation of a successful result if effectual drainage be secured by the aid of gauze packing and a tube.

Conclusive clinical evidence of this position will take some time to accumulate. The author offers the results of nine cases as bearing directly upon it. In all nine cases the common duct was freely opened; in two the gall-bladder also, to remove a large impacted stone. In three of them an attempt was made to close the opening in the duct by sutures, without success, however, as in all three a free escape of bile occurred through the drainage-tube. Of the nine cases, two died; one death was due to hæmorrhage, chiefly from the abdominal parietes, a few hours after the operation; in the second case no satisfactory explanation could be given or found post-mortem of nervous symptoms of a peculiar sort ending in death on the third day. In neither was there peritonitis or any bile in the peritoneal cavity. The remaining seven cases made excellent and complete recoveries.—*British Medical Journal*, November 3, 1894.

XI. Extensive Intestinal Resection for Tuberculosis. By Dr. W. Körte (Berlin). Körte presented a patient with the following brief history:

(1) Man, twenty-five years old, was operated upon November 16, 1891, for acute purulent peritonitis.

(2) March 16, 1892. Extirpation of the processus vermiformis.

August, 1892. Tumefaction was observed along cæcum and ascending colon.

(3) August 27, 1892. Extirpation of the cæcum and colon nearly as far as the flexura hepatica. Sound tissue in the gut was not reached. Anus præternaturalis formed. Examination of the specimen showed it to be tuberculosis. The enterotome was applied without result.

(4) November 19, 1892. Twenty-one centimetres more of diseased colon was resected. The end of the colon was turned in and the small intestine anastomosed laterally. A fistula formed.

(5) February 27, 1893. Plastic operation after the method of Dieffenbach was not successful.

(6) May 13, 1893. Implantation of a loop of small intestine into the flexura coli iliaca. Narrowing of the colon by sutures of the skin. For fourteen days fæces passed per rectum, and then the fistula became re-established.

(7) July 3, 1893. Colon separated from the implantation, and both intestinal openings closed by invagination. Regular evacuations by rectum followed.

The remaining portion of colon continued to secrete intestinal juices, and so the final operation was done.

(8) July 28, 1893. Extirpation of the entire segment of colon which was shut off from the fæcal current.

Recovery followed. Subsequent treatment with iodoform gauze tamponnade. The fæces from the fistula remained always thin in character, but as soon as it travelled through the short tract of colon and the rectum it became firm and natural.

In intestinal anastomosis the gut must be cut across and the portion from which the current is diverted must be sewed up or else the intestinal contents may find their way therein.—*Verhandlungen der deutschen Gesellschaft für Chirurgie*, XXIII Kongress, 1894.

XII. A Rare Form of Strangulation of the Small Intestine in Inguinal Hernia. By Dr. C. LAUENSTEIN (Hamburg). Lauenstein has reported a case of strangulated, external, right inguinal hernia in a twenty-four-year-old man, in which two coils of intestine which were the seat of hæmorrhagic infarcta were found. After liberating the strangulation by dividing the internal ring, another coil of intestine in which a similar condition was found was drawn out through the opening. This proved to be the portion of gut between the two strangulated coils.

The whole length of these three segments was about one metre, and was about fifty centimetres above the valve. The mesentery of this portion of intestine showed cicatricial thickenings. The gut was replaced and the operation proceeded with after the method of Bassini. After a period of meteorism, vomiting, and diarrhœa the patient recovered.

Lauenstein advises always that when two knuckles of intestine are found herniated, the intermediate segment be examined.

A similar case could not be found in the literature. The reported cases of artificial anus with four openings are probably similar cases. —*Verhandlungen der deutschen Gesellschaft für Chirurgie*, XXIII Kongress, 1894.

XIII. Resection of the Rectum for Prolapsus. By Dr. BOGDANIK (Biala). Bogdanik recommends for the treatment of severe prolapsus recti the resection which was first performed by Auffret (*Progrès méd.*, 1882, No. 34). A year later Mikulicz reported the operation with a thorough description of the technique (*Gazeta Ckarska*, 1883, Nos. 47 u. 48). Billroth, Nicoladoni, Bogdanik, Nelaton, Perier, Krönlein, and Hoffa have made reports of successful operations.

The technique of the operation presents no especial difficulty when the suture described by Bogdanik is used. The intestine should be emptied thoroughly by laxatives and enemata, and just before the operation tincture of opium should be given. The patient is placed in the lithotomy position, and the apex of the tumor grasped by forceps in the hands of an assistant. The left index finger of the operator is introduced into the thoroughly cleansed bowel, and an incision carried about the prolapsed bowel about one or two centimetres from the anal border. If the surgeon is convinced that there are no contents between the outer tube which has been cut about and the inner, the two tubes are united by interrupted sutures which are applied between the wound and the anal orifice or border. An assistant holds one end of the threads, while the outer and inner intestinal tubes are united by means of the other until the whole ring is surrounded. Before each needle puncture is made the wound in the outer tube is widened, so that after the suture has been completed the outer tube is separated circularly. A ligation of the vessels, as Mikulicz recommends in his method, is superfluous, and the loss of blood is very small. The inner tube is now cut off at the level of the incised wound, and the mucous membrane of the outer and inner intestinal tubes united by a continuous suture. Bogdanik recommends the use of catgut, though the choice of suture material is indifferent. After the completion of the suture the forceps are loosened, and the stump of rectum slips back into place. An iodoform and opium suppository is introduced, and the buttocks fixed by a firm adhesive strap.

Bogdanik has operated upon four cases by this method, all of which were able to be up and about in a few days. They varied in age from one to three years. A fifth child, five years of age, in which the prolapsus was complicated by an hydrocele, died of septic peritonitis after three days. The first case upon which he operated died of variola during convalescence. The autopsy showed that good union had taken place at the wound.

Nelaton had recurrence of the prolapsus in the two cases upon which he operated. In Bogdanik's cases the cicatricial contraction about the anus prevented further prolapsus. A patient, one year of age, in which he resected eight centimetres of rectum, was returned to the hospital thirteen months later with symptoms of incarceration. Examination showed that the rectum was so contracted that its lumen would not admit a fine probe ; and an anus præternaturalis was made. The peritoneal cavity contained some serous fluid and was quite congested, when the intestine was opened, beside a large amount of fæcal matter ; there escaped a great deal of indigestible material, such as potato-peelings, egg-shells, pieces of cork, cherry-stones, etc. The patient improved greatly after the operation, and the peritoneal symptoms disappeared. The rectal stricture was then stretched by bougies ; but as a satisfactory result was not obtained by this means, radiating incisions were made in every direction. The rectum was then stretched by the fingers, and above the seat of the stricture were found plum-pits, cherry-stones, etc. The freshened edges of the colostomy wound were then sutured. The bowels emptied per rectum, though a slight abdominal fistula persisted. With the view of closing this fistula the patient was again chloroformed. Anæsthetization was established in three minutes, when asphyxia developed, and the patient died after five hours.

In the future, Bogdanik intends to perform colopexy, instead of the resection. He suggests opening the abdomen on the left side as in colostomy, and, after drawing up the prolapsed bowel, suturing it to the parietal peritoneum. This operation is neither more difficult nor more dangerous than the resection of the lower end of the rectum. It cannot, of course, be done in every case, as, for example, when the serosæ of the prolapsed rectum are adherent. *Verhandlungen der deutschen Gesellschaft für Chirurgie*, XXIII Kongress, 1894.

JAMES P. WARBASSE (Brooklyn).

EXTREMITIES.

I. Results in Three Hundred and Forty Major Amputations. By Dr. W. L. ESTES (South Bethlehem, Pa.). Of the total number only nineteen were done for diseased conditions; 321 were done for injuries to limbs, usually the result of great violence, as they were all cases from railroads, mines, or factories.

The time of amputation in his practice has been determined by the condition of the patient when seen by him. He pronounced it improper to amputate a limb when the patient is almost moribund from loss of blood, or nearly exhausted from a long, rough journey, or not yet recovered from psychical or primary shock. A major amputation undertaken at once is usually followed by death. He is convinced that the condition ordinarily observed by the surgeon a few hours after a major injury, and usually called shock, is really a condition of acute anæmia. To operate while in this condition is usually fatal. If, however, the hæmorrhage be thoroughly controlled by an Esmarch tourniquet, applied over the crushed tissues if practicable; and if not, at a point just above them, and the comminuted tissues and the uninjured parts of the limb be thoroughly cleaned and disinfected, and an antiseptic dressing applied over all, the amputation may be deferred for twenty-four or thirty-six hours, or even longer, while by careful feeding and stimulation the patient may recover some strength and the blood-vessels have time to fill with fluid. If the patient is in good condition, nothing is to be gained by waiting.

For the whole number of single major amputations, 294, including seven hip-joint amputations, the general mortality rate is 4.76 per cent. During the last six years, the cases being exactly of the same character as before, but having had greater care to prevent hæmorrhage on their way to the hospital, and in cases of much loss of blood, with delay until the condition of acute anæmia was somewhat relieved, there were 180 single major amputations with only five deaths, or 2.77 per cent. mortality. Included in these cases are six hip-joint amputations.

In twenty-six cases of multiple operations and extremely complicated injuries, there were three deaths, 11.5 per cent. mortality.

The detailed figures as to the 294 single major amputations are as follows:

	No.	Deaths.	Mortality. Per Cent.
Forearm	37	0	0.
Arm	27	1	3·7
Shoulder-joint	13	1	7·99
Foot	19	0	0.
Leg	97	2	2.06
Knee-joint	17	1	5.88
Thigh, lower third	44	5	11.36
Thigh, middle third	25	2	8.
Thigh, upper third	8	1	12.50
Hip-joint	7	1	14 28

These surpassingly good results the author believes to be due to aseptic practice and to the saving of blood before and during operation.—*Medical Record*, November 3, 1894.